UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

JUN 11 2014

CERTIFIED MAIL - RETURN RECEIPT REQUESTED
Article Number: 7005 3110 0000 5967 8671

Andrew Pappachen, Director of Public Works
Department of Water & Sewer Utilities
City of Newark
1294 McBride Avenue
Little Falls, NJ 07424

Re: In the Matter of: Newark Water Department, PWS ID: NJ0714001
Administrative Order Docket No. SDWA-02-2014-8018

Dear Mr. Pappachen:

Enclosed you will find a combined Information Request and Administrative Order (together, the "AO"). Among other things, the AO finds that Newark Water Department ("Newark PWS") is a public water supplier as defined by the Safe Drinking Water Act ("SDWA") and 40 C.F.R. §141.2, and is, therefore, subject to its requirements. The Environmental Protection Agency ("EPA") also finds that Newark Water Department failed to comply with the SDWA and New Jersey regulation N.J.A.C. 7:10. The enclosed AO requires Newark Water Department to comply with these requirements.

Also enclosed is a sanitary survey report for the inspection of Newark Water Department conducted by EPA and NJDEP the week of February 10, 2014. Please note that any information requested in the AO may be submitted on disk in lieu of paper copies.

I urge your cooperation in assuring that the requirements of the enclosed AO are met. The violation of an AO may subject the violator to an administratively assessed civil penalty not to exceed $37,500 per day of violation.

If you have any questions regarding the enclosed Order, please contact Nicole Foley Kraft, Chief, Groundwater Compliance Section, at (212) 637-3093.

Sincerely,

Dore LaPosta, Director
Division of Enforcement and Compliance Assistance

Enclosures

cc: Karen Fell, NJDEP
Marcedius Jameson, NJDEP
Richard Paull, NJDEP-Northern Bureau

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
290 BROADWAY
NEW YORK, NY 10007-1866

IN THE MATTER OF:
Newark Water Department 1294 McBride Avenue Little Falls, NJ 07424
PWS ID: NJ0714001
Respondent

INFORMATION REQUEST AND ADMINISTRATIVE ORDER

SDWA-02-2014-8018

I. STATUTORY AUTHORITY

The following Information Request and Administrative Order (together, the "Order") are issued pursuant to Sections 1445(a)(1)(B) and 1414(g) of the Safe Drinking Water Act ("SDWA" or "the Act"), respectively, 42 U.S.C. §§300j-4(a)(1)(B) and 300g-3(g). These authorities have been delegated by the Administrator of the United States Environmental Protection Agency ("EPA") to the Regional Administrator, EPA Region 2 and further delegated to the Director of the Division of Enforcement and Compliance Assistance, EPA Region 2.

II. FINDINGS

1. The City of Newark (hereinafter "Respondent") owns and/or operates the Newark Water Department "public water system", within the meaning of Section 1401(4) of the SDWA, 42 U.S.C. §300f(4), and 40 C.F.R. §141.2, located in Little Falls, New Jersey.

2. Respondent is a "supplier of water" within the meaning of Section 1401(5) of the SDWA, 42 U.S.C. §300(f)(5), and 40 C.F.R. §141.2.

3. Respondent is a "person" within the meaning of Section 1401(12) of the SDWA, 42 U.S.C. §300f(12), and is subject to an Administrative Order ("AO" or "ORDER") issued under Section 1414(g)(1) of the SDWA, 42 U.S.C. §300(g)-3(1).

4. Respondent's public water system ("PWS") provides water for human consumption. Respondent's PWS regularly serves at least 15 service connections used by year-round residents and/or serves a population of at least 25 individuals, and is therefore a "community water system" ("CWS"), as defined by Section 1401(15) of the SDWA, 42 U.S.C. §300f(15). Respondent is therefore, subject to the requirements of Part B of the SDWA, 42 U.S.C. §300g et seq., and its implementing regulations found at 40 C.F.R. Part 141.

5. The New Jersey Department of Environmental Protection ("NJDEP" or "State") administers the Public Water Supply Supervision Program in New Jersey pursuant to Section 1413 of the SDWA. The approval of primary enforcement responsibility from EPA to NJDEP was effective as of July 13, 1979. NJDEP is the primacy agency, as that term is defined in 40 C.F.R. §142.2.

However, NJDEP referred the Newark Water Department PWS to EPA for further investigation and appropriate action as part of the Fiscal Year (FY) 2013 EPA-NJDEP Inspection Workplan.

6. Pursuant to Section 1414(i)(4) of the SDWA, 42 U.S.C. §300g-3(i)(4), the implementing regulations for New Jersey's Safe Drinking Water Program (N.J.A.C. 7:10) are applicable requirements of the SDWA.

7. Pursuant to N.J.A.C. 7:10-11.6, auxiliary power equipment must be available for all indispensable source pumping and treatment units.

8. On February 10-14, 2014, EPA and NJDEP conducted a sanitary survey at Respondent's PWS. Pursuant to 40 C.F.R. §141.723, a sanitary survey is an onsite review of the water source, facilities, equipment, operation, maintenance, and monitoring compliance of a PWS to evaluate the adequacy of the PWS, its source and operations, and the distribution of safe drinking water.

Findings of Violation

9. Based on the inspection conducted at Respondent's system, it was observed that no back-up power was available at the Wayne pump station, in violation of N.J.A.C. 7:10-11.6.

Significant Deficiencies

10. Pursuant to 40 C.F.R. §141.723, a significant deficiency includes a defect in design, operation, or maintenance, or a failure of malfunction of the sources, treatment, storage, or distribution system that EPA determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.

11. Based on the inspection conducted at Respondent's system, the following significant deficiencies were identified:

    i. The most recent inspection report of the Belleville storage tank could not be located. Newark PWS management was unsure if it had ever been inspected.

    ii. Respondent currently operates an uncovered finished water reservoir, Cedar Grove Reservoir. According to 40 CFR Part 141.714 (c) (1) or (2), Respondent is required to do one of the following: "*(1) Systems must cover any uncovered finished water storage facility or (2) Systems must treat the discharge from the uncovered finished water storage facility to the distribution system to achieve inactivation and/or removal of at least 4-log virus, 3-log Giardia lamblia, and 2-log Cryptosporidium using a protocol approved by the State.*"

    EPA inspectors understand that Respondent has made a treatment proposal submittal for the Cedar Grove Reservoir to the State of New Jersey and are awaiting a regulatory decision.

12. By letter dated June 2014, EPA notified Respondent of the above referenced significant deficiencies. Respondent has 45 days from receipt of letter to provide a corrective action plan.

13. EPA is issuing this Information Request and Administrative Order to place Respondent on an enforceable schedule to comply with the requirements of the SDWA and NJDEP applicable regulations and to obtain further information to evaluate compliance.

III. REQUESTED INFORMATION

Based on the Findings of Fact and Conclusions of Law, above, and pursuant to the authority of Section 1445(a)(1)(B) of the SDWA, 42 U.S.C. §300j-4(a)(1)(B), Respondent is required to report the following to the EPA within thirty (30) days of receipt of this AO:

1. Combined Filter Effluent ("CFE") and Individual Filter Effluent ("IFE") turbidity continuous monitoring data for the period of January 1, 2011 through February 1, 2014, as required by N.J.A.C. 7:10-9.6(a).

2. CFE and IFE turbidity grab sample results for the period of January 1, 2011 through February 1, 2014, as required by N.J.A.C. 7:10-9.6(b).

3. Documentation of filter backwashes for the period of January 1, 2011 through February 1, 2014, including filter number, date, time and duration of the backwash.

4. Signed and dated copies of NJDEP Form BSDW-022, "IESWTR Turbidity Report" submitted for the period of January 1, 2011 through February 1, 2014.

5. Continuous monitoring data and grab sample results for chlorine residual entering the distribution system for the period of January 1, 2011 through February 1, 2014, as required by N.J.A.C. 7:10-9.6(h).

6. Total Coliform Rule Sample Siting Plan, as required by 40 CFR Part 141.21(a).

7. Signed and dated copies of NJDEP Form BSDW-041, "Monthly Operating Report for Surface Water Treatment Plants/GWUDISW" submitted for the period of January 1, 2011 through February 1, 2014.

IV. ORDER

Based upon the foregoing Findings of Fact and Conclusions of Law and pursuant to the authority of Sections 1414(g) of the SDWA, 42 U.S.C. §300g-3(g), Respondent is hereby ORDERED to do the following:

1. Within forty-five (45) days of receipt of this AO, Respondent must submit to EPA and NJDEP, for evaluation and approval, an action plan for correction of the violation identified in Section II, Paragraph 9 above. The action plan must detail the steps that Respondent will take to return to compliance, including milestones and completion dates.

2. All notices, reports, or other submissions by Respondent shall contain the following certification:

"I certify, under penalty of law, that the information contained in or accompanying this submission is true, accurate and complete based upon representations as to accuracy and completeness made to me either orally or through submission of documentation by appropriate personnel with responsibility for the matters contained herein".

3. All information required to be submitted by this Order to EPA and NJDEP shall be mailed to:

Nicole Foley Kraft, Chief
Groundwater Compliance Section
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866
(212) 637-3093

and

Richard Paull, Manager
Bureau of Water Compliance and Enforcement-Northern
New Jersey Department of Environmental Protection
7 Ridgedale Avenue
Cedar Knolls, NJ 07927

V. GENERAL PROVISIONS

1. Notwithstanding Respondent's compliance with any requirement of this Order, Respondent's failure to comply with all of the requirements of the Act and Part 141 may subject Respondent to additional enforcement action, including but not limited to judicial, administrative and equitable actions.

2. This Administrative Order shall not prohibit, prevent, or otherwise preclude EPA from taking whatever action it deems appropriate to enforce the Act in any manner and shall not prohibit, prevent, or otherwise preclude EPA from using this Order in subsequent administrative or judicial proceedings. Nothing in this Order shall constitute a waiver, suspension or modification of the requirements of the Act, or the rules and regulations promulgated thereunder which remain in full force and effect. Issuance of this Order is not an election by EPA to forgo any civil or criminal action otherwise authorized under the Law.

3. The Respondent may be subject to an administrative civil penalty of up to $32,500 pursuant to Section 1414(g)(3)(B) of the Act, 42 U.S.C. §300g-3(g)(B) or a civil penalty assessed by an appropriate United States District Court that exceeds $32,500 pursuant to Section 1414(g)(3)(C) of the Act, 42 U.S.C. §300g-3(g)(3)(C). A violation of any term of this Order may also subject the Respondent to a judicial civil penalty of up to $37,500 per day per violation pursuant to Section 1414(b) of the Act, 42 U.S.C. §300g-3(b).

4. Respondent may seek federal judicial review of the Order pursuant to Section 1448(a) of the Act, 42 U.S.C. §300j-7(a).

5. This Order does not relieve Respondent of any responsibilities or liabilities established pursuant to any applicable federal, State or local law.

6. This Administrative Order shall take effect upon the signature of the Director, Division of Enforcement and Compliance Assistance.

ORDERED, this 11th day of JUNE, 2014.

Dore LaPosta, Director
Division of Enforcement and Compliance Assistance

United States Environmental Protection Agency
Office of Enforcement and Compliance Assurance
Office of Criminal Enforcement, Forensics and Training

National Enforcement Investigations Center

NEIC

NEICVP1069E01

SAFE DRINKING WATER ACT SANITARY SURVEY

Newark Water Department
Newark, New Jersey
NEIC Project No.: VP1069

May 2014

Project Manager:

Christine Alvarez, Physical Scientist

Other Contributors:
David Parker, Civil Program Coordinator and Technical Lead
Kacy Sable, Physical Scientist
Daren Vanlerberghe, Environmental Engineer
Samantha Dominguez, Principal Analytical Chemist

Prepared for:

EPA Region 2
290 Broadway
Mail Code: 20TH FL
New York, New York 10007-1866

Authorized for Release by:

Suzanne Schulman, Civil Services Section Chief

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
P.O. Box 25227
Building 25, Denver Federal Center
Denver, Colorado 80225

CONTENTS

APPENDICES (NEIC-Created Documents)***

This Contents page shows all of the sections contained in this report and provides a clear indication of the end of this report.

INTRODUCTION

At the request of U.S. Environmental Protection Agency (EPA) Region 2, EPA's National Enforcement Investigations Center (NEIC) performed a sanitary survey of the Newark Water Department public water system (Newark PWS) in Newark, New Jersey. The City of Newark Department of Water and Sewer Utilities operates and manages the Newark PWS and provides potable water to the City of Newark and surrounding areas (PWS ID No. NJ0714001). The purpose of the sanitary survey was to evaluate and document the capabilities of Newark PWS programs, sources, treatment, storage, distribution network, operation and maintenance, and overall management to continually provide safe drinking water and identify any deficiencies that may adversely impact the public water system.

GENERAL BACKGROUND

The City of Newark water sources are the Pequannock and Wanaque North and South watersheds. The City of Newark owns and operates the Pequannock system, but the North Jersey District Water Supply Commission operates the Wanaque North and South systems. The Pequannock watershed includes five raw water supply reservoirs: Charlotteburg, Echo Lake, Canistear, Clinton, and Oak Ridge Reservoirs. According to the Newark Watershed Conservation and Development Corporation website, http://newarkwatershed.com, Charlotteburg Reservoir is the final reservoir in the Pequannock watershed, and is the primary source of raw water for the Newark PWS.

Charlotteburg Reservoir is part of the Highlands Basin Aquifer System and is located near Newfoundland, New Jersey. According to Michael Awertschenko, Pequannock water filtration plant (PWFP) superintendent, air is introduced at the bottom of Charlotteburg Reservoir to prevent stratification and oxidize organic manganese. In addition, copper sulfate is added seasonally to control algal blooms. Raw water from Charlotteburg Reservoir is fed by gravity flow to Charlotteburg Dam and is transported through two sets of traveling screens. The traveling screens include two fine screens to remove large objects (e.g., sticks, vegetation, fish, etc.).

Screened raw water from Charlotteburg Reservoir is sent through a channel that leads to Newark PWS's chemical building (also called the pretreatment building during the sanitary survey). The water in the channel flows through a series of pretreatment structures. First, a mixture of aluminum potassium sulfate (alum) and polymer are mixed into the water to promote coagulation and increase settling. Chlorine gas is injected into the raw water via a diffuser for disinfection. Calcium carbonate (or lime) is added for pH adjustment. From the chemical building, the water is transported through a 72-inch concrete pipe to the PWFP.

The PWFP is the City of Newark's filtration plant and is used to remove color and turbidity from the disinfected water. According to Andrew Pappachen (A. Pappachen), the

PWFP's licensed operator, the PWFP peak flow was designed to accept 80 million gallons per day (mgd) total system flow. However, the PWFP total production capacity is 45 to 50 mgd. The water undergoes a series of treatment steps, including a four-stage mixing chamber where water flows through a baffle configuration for chemical mixing, 12 gravity filters to remove solids and decrease turbidity, and a post-chlorination process. Wastewater from sand filters returns to the head works of the PWFP, and the filter sludge is sent to an on-site sedimentation pond (also known as the sludge pond). Treated water from the PWFP is transferred via the Pequannock Aqueducts to Cedar Grove Reservoir in Cedar Grove, New Jersey.

In order to manage disinfection byproducts (DBPs) produced during the treatment process, Newark PWS has placed a chlorine booster station at the Montclair Station, which is located just below the intake for Cedar Grove Reservoir. Sodium hypochlorite is added to the water at the Montclair Station as a booster disinfectant.

Cedar Grove Reservoir is Newark PWS's uncovered finished water reservoir. It is located in a protected wildlife area, and downhill from a residential community. Newark PWS personnel have limited access. Waterfowl and other animals have access to Cedar Grove Reservoir. Newark PWS is currently under an administrative order with the New Jersey Department of Environmental Protection (NJDEP) that will require Cedar Grove Reservoir to be in compliance with the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR).

Newark PWS's primary distribution system is the Pequannock Aqueducts, which include 42-inch and 48-inch ductile iron distribution pipes. The Pequannock Aqueducts were installed in the late 1800s, and have not been properly cleaned since their installation. A. Pappachen also stated that the water system loss rate (or unaccounted for water loss rate) is between 20 and 25 percent.

More information on treatment, monitoring, and operations is provided in the Newark NEIC Inspection Report Form **(Appendix A).**

REGULATORY BACKGROUND

National Primary Drinking Water Regulations (NPDWRs) are incorporated or codified in 40 Code of Federal Regulations (CFR) Part 141. The Safe Drinking Water Act (SDWA) requires the EPA to establish regulations for contaminants in drinking water that may have an adverse effect on the public health. The NPDWRs include maximum contaminant levels (MCLs) or treatment techniques for more than 100 contaminants. SDWA requirements are implemented primarily by the states.

According to New Jersey's administrative code (NJAC) 7:10, *Safe Drinking Water Act Rules*, NJDEP has the authority to implement the SDWA regulations in New Jersey. NJAC 7:10 covers the New Jersey SDWA. Specifically, NJAC 7:10-5.1, Applicability of National Regulations, states, "…the Department adopts and incorporates herein by reference the National

Primary Drinking Water Regulations, 40 CFR 141, as amended and supplemented, including all siting requirements, filtration and disinfection requirements, maximum contaminant levels, monitoring and analytical requirements, reporting requirements, public notification requirements, recordkeeping requirements, and the National Primary Drinking Water Regulations Implementation, 40 CFR 142 Subparts E, F, G and K, for variance and exemption requirements as the New Jersey primary drinking water regulations, applicable to all public water systems."

The City of Newark Department of Water and Sewer Utilities operates and manages the Newark PWS that provides potable water to the City of Newark and surrounding areas (PWS ID No. NJ0714001). The federal SWDA and the New Jersey SDWA state that if a PWS has at least 15 service connections and serves at least 25 people per day for 60 days of the year, then the federal SWDA and the New Jersey SDWA requirements apply to this PWS. The City of Newark has approximately 57,616 connections and a population of 273,000. As promulgated under the NJAC 7:10 SDWA rules, the Newark PWS is regulated and required to comply with the federal SDWA and the New Jersey SDWA requirements.

ON-SITE INSPECTION SUMMARY

Sanitary Survey Activities

The NEIC inspection team conducted the on-site sanitary survey of the Newark PWS from February 10 through 14, 2014. The NEIC inspection team included Christine Alvarez (project manager), David Parker (SDWA technical lead), Kacy Sable, and Daren Vanlerberghe.

The sanitary survey included a comprehensive on-site evaluation of the Newark PWS components and operation and maintenance procedures. The sanitary survey objectives were to assess the physical infrastructure, as well as system operations, maintenance, and management aspects, including[1]:

- Sources (surface intakes)
- Finished water storage tanks
- Treatment (chlorination facilities and the PWFP)
- Distribution system operation and components (water lines, system pressure issues, and valves including isolation, pressure control, and others)
- Pumps, pump facilities, and pump controls
- Monitoring, reporting, and data verification
- Water system management and operations
- Operator compliance with state and licensing requirements

Credentials were presented to A. Pappachen during the opening meeting on February 10, 2014. A close-out meeting was held on February 14, 2014, to discuss the significant deficiencies

and observations. EPA Region 2 representatives Amy Vinciguerra, Rosa Brignoni, Kara Sinon, and Christopher Mecozzi participated in the closing meeting via phone. NJDEP representative Syed-Imad Rizvi participated in the close-out meeting, and Joseph Liccese participated via phone. NEIC stressed that final determinations will be made in conjunction with EPA Region 2 personnel and following review of documents provided by Newark PWS.

Regulatory violations, significant deficiencies and observations made by the NEIC inspection team during the Newark PWS sanitary survey are summarized below. Regulatory violations are areas where the water system was not in compliance with Federal or State requirements. According to 40 CFR § 141.723.b, significant deficiencies are defined by the EPA as "a defect in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system, that EPA determines to be causing, or has the potential for causing, the introduction of contamination into the water delivered to consumers." Observations are potential issues that may lead to a regulatory violation or significant deficiency if not corrected. All observations are documented in the NEIC field logbooks. The appendices cited in this report are highlighted and hyperlinked to the specified document. Photographs were taken by C. Alvarez and D. Vanlerberghe during the Newark PWS sanitary survey and are located in **Appendix B.**

Regulatory Violations:

1. No back-up power was available at the Wayne pump station as required by NJAC 7:10-11.6(i).

Significant Deficiencies

2. The most recent inspection report of the Belleville below-grade storage tank could not be located. Newark PWS management was unsure if it had ever been inspected or if finished water storage records were available. This is required under NJAC 7:10A 1.12.

3. The Newark PWS currently operates an uncovered finished water reservoir, Cedar Grove Reservoir. According to **40 CFR Part 141.714 (c) (1) or (2), the Newark PWS is required to do one of the following: "***(1) Systems must cover any uncovered finished water storage facility or (2) Systems must treat the discharge from the uncovered finished water storage facility to the distribution system to achieve inactivation and/or removal of at least 4-log virus, 3-log Giardia lamblia, and 2-log Cryptosporidium using a protocol approved by the State."*

   NEIC inspectors understand that the Newark PWS has made a treatment proposal submittal for the Cedar Grove Reservoir to the State of New Jersey and are awaiting a regulatory decision.

Summary of Observations:

4. No back-up power was available at the Clifton pump station (also known as the Chittenden Road Station).

5. A tree had fallen on the perimeter fence at Charlotteburg Reservoir. Although the tree had been removed, the damaged fence had not been repaired.

6. According to A. Pappachen, the sludge lagoon that holds backwash solids located near the PWFP is nearly full of solids. Newark PWS management reported that a contract had been issued to remove solids from the lagoon. This project needs to be completed in an expeditious manner for the lagoon to continue to be used for filter backwash storage and to prevent a discharge from the lagoon.

7. The NEIC inspection team noted that Newark PWS utility rates are among the lowest in the State of New Jersey, which appears to be having an impact on the Newark PWS's ability to currently secure bonds and could present further issues for Newark PWS as sources of funding are sought for capital improvements in the future.

8. The NEIC inspection team observed that the Magnafloc® secondary chemical containment area in the PWFP may not have sufficient capacity.

9. The NEIC inspection team noted that half of the filter #4 surface sweeps were not functioning. Newark PWS must develop and implement a filter maintenance program throughout the PWFP that addresses the filter media/support/under-drain system to prevent future occurrences of this and related issues.

10. The Newark PWS uses two transmission mains to bring finished water from the PWFP to the customers. Newark PWS has not undertaken a study to assess the condition of these lines and any associated vulnerabilities related to their age and condition.

11. The NEIC inspection team noted that the Newark PWS has a 20 to 25 percent water loss rate, which is above industry average. Newark PWS has not conducted a water loss audit or instituted a leak detection program.

12. The Newark PWS currently conducts annual flushing on dead-end lines. Newark PWS has not instituted a comprehensive unidirectional flushing program.

Appendix A

US ENVIRONMENTAL PROTECTION AGENCY, REGION 2
FILTRATION PLANT INSPECTION FORM
(Modified by K. Sable with NEIC)

Basic Information

System Name: Newark Water Department PWSID: NJ0714001
Filtration Plant Name: Pequannock Water Filtration Plant

Address: 2224 Route 23 North, West Milford, New Jersey 07480

Type of Filtration Provided: Direct

Average Daily Demand (MGD)	Peak Daily Demand (MGD)	Total Production Capacity (MGD)	FP Design Capacity (MG)
35 – 45 MGD	45 MGD	50 MGD	80 MGD

Storage Capacity	Raw Water (MG)	Treated Water (MG)
650 MG (usable storage approximately 500 MG)	2964 MG Need to look at MP	650 MG (see attached Cedar Grove Reservoir Table)

Staffing and Certification Information		
Name	Position	Certification/Agency
See attached Memorandum of 2013 Licensed Operators		Newark PWS provided a copy of the Licensed Operator Certification by NJDEP **(Attachment A)** on February 19, 2014.
Required Plant Operator Certification: T-4/W-4		

Inspection Participants	
Name	Agency
See attached Opening Conference Sign In Sheet dated 02/10/2014 (in addition to below participants) **Attachment B**	
Syed Imteaz Rizvi (not listed on Opening	NJ DEP

Conference sign-in sheet)	

Treatment Diagram or Description

See Attachment C (with hand amended modifications documenting on-site observations)

List of Facilities and Description	See above diagram

Source

1. Is any treatment provided in the reservoir? In Charlotteburg Reservoir copper sulfate is added seasonally (when necessary) for algae.

2. How often is the intake(s) inspected? Daily, including traveling screens, monitors and pumps.

3. Is raw water monitored? For what parameters? A raw water sample is taken every day and evaluated for turbidity, pH, conductivity, temperature, color, alkalinity, total hardness, calcium, and total organic carbon (TOC). Algae is monitored seasonally via sampling in the reservoir and analyzing the sample in the laboratory for two types of algae.

4. Are there are fluctuations in raw water quality? Yes, raw water quality fluctuates during storm events and turnover which occurs in the spring and fall. Facility representatives explained that storm events include 2 inches or more of sudden precipitation or thunder storms. Windy conditions also affect raw water quality; however, during the winter when the reservoir is frozen the raw water quality is relatively constant.

5. Comments: SCADA monitoring system at this location includes screen monitoring which will alarm if there are problems.

Aeration

Type: Spray (but not in use anymore)

Comments: Facility representatives explained that aeration was used for taste and odor control but the equipment was taken off-line when filtration was installed in 1990. In addition, due to changes in the plant operation, the customers do not report taste and odor concerns anymore.

Odor/Taste Control

Powdered Activated Carbon? No KMnO4? No
Dosage: N/A

Comments: Seasonal addition of copper sulfate (if necessary for the control of algae growth in the reservoir) as part of raw water treatment.

Chemicals in Use

Chemical	Point of Use	ANSI/ NSF certified?	Reason for Use	Stored Properly?	Method for Determining Dosage?
Chlorine gas	- Pre-chlorination before treatment plant in pretreatment building though diffusers into flume	See **Attachment A**	Disinfection	Yes	To maintain set residual concentration
Liquid sodium hypochlorite	- Post Chlorination after lime addition in chemical building via pipe into flume - Rechlorination in Montclair building via line feed into flume			Yes	To maintain set residual concentration
Mixture of aluminum sulfate and 5% polymer	Before treatment plant in pretreatment building through pipe into flume		To form flocculant and increase settling	Yes	Based on jar testing in laboratory and calculated flow in partial flume (in MGD)
Copper Sulfate	At intake in Charlotteburg Reservoir		Reduce algae population	Yes	Perform grab sampling at various locations in reservoir and check for algae count

Polyaluminum Chloride (PACl)	At treatment plant via pipe into first section of the mixing chamber		To form flocculant and increase settling	Yes	Based on jar testing in laboratory and calculated flow in partial flume (in MGD)
Sodium Silicate	At treatment plant as water exits the plant		Corrosion control	Yes	Aim for 6-8 parts per million (PPM) based on the Lead and Copper Rule
Mixture of Magnifloc® polymer (at 35%) and No. A1883 polymer (at 0.25%)	At the treatment plant in the decant tanks through a pipe into the channel	Yes	To increase settling and flocculation before recycling water to the head of the treatment plant	Not sure Magnifloc® has adequate secondary containment	Try to maintain Magnifloc® at 1.0 mg/L and No. A1883 at 0.2 mg/L. Fluctuates seasonally with more necessary in the winter and less required in the summer. Based on jar testing in laboratory and flow in plume calculated in MGD
Lime	At treatment plant in chemical building		Corrosion control	Yes	Based on laboratory analysis and flow in plume calculated in MGD

Equipment Calibration

Equipment	Calibration Frequency
Scale for chlorine in pretreatment building	Annually by an outside contractor
Turbidity meters for each filter in the treatment plant	Every 1-2 weeks performed internally
CFE Chlorine meter	Monthly (via internal work order) and perform grab sample laboratory check
CFE Turbidimeter	Daily grab sample laboratory check internally plus biweekly check against standards
CFE pH	Monthly (via internal work order) and perform grab sample laboratory check
Wayne pump station pH meter	Biweekly internally
Chlorine meter in Montclair building	Biweekly performed internally

Turbidity Removal

Coagulation		Sedimentation	
Is coagulant used at all times?	Yes	Number and type of sedimentation basins?	NA - No designated sedimentation basins but occurs at various locations throughout the process including the mixing chamber, filters, holding tanks and decant tanks. A sludge lagoon is used as storage for sludges collected throughout the system.
Type of coagulant used? Why?	-Mixture of aluminum sulfate and 5% polymer to form flocculant and increase settling as part of pretreatment -PACl in the mixing chamber to form flocculant and increase settling as part of the treatment process -Mixture of Magnifloc® polymer (at 35%) and No. A1883 polymer (at 0.25%) in the decant tanks to increase settling and flocculation before recycling water to the head of the treatment plant	Is the water clear near the outlet of the sedimentation basin?	NA
How coagulant is added to the treatment?	- Mixture of aluminum sulfate and 5% polymer through pipe into flume - PACl via pipe into first section of the mixing chamber - Mixture of Magnifloc® polymer (at 35%) and # A1883 polymer (at 0.25%) into treatment channel via pipe	Turbidity of the settled water (if measured)	NA

Dosage?	Based on flow in partial flume and jar tests performed in laboratory	How often is sludge removed?	NA
Are jar test conducted?	Yes	Basin condition	NA
What initiates a jar test? How often is conducted?	Routine practice on a weekly basis. If concerns arise more frequently then additional tests will be conducted	Volume or measurements of basin	NA
Flocculation		**Filtration**	
Number of floc basins	NA - No designated floc basins but occurs at various locations throughout the system including in pretreatment, the mixing chamber, and the decant tanks. See coagulation section and the chemical section for more information	Number of filters	12
Type of floc basins	NA	Type of filters gravity or pressure	Gravity
Volume or measurements of basin	NA	Filter media type (single, dual, multi)	Dual (anthracite and sand)
Are flocculators adjustable?	NA	Visible problems on the surface of the filter?	No
Does floc formation appear adequate?	NA	Are rapid fluctuations present in the flow?	No
Backwash		Pressure filter:	No
Is a surface wash or air scour present?	Yes, surface wash	Last internal inspection, report	
Is filter backwash recycled? No, NPDES permit	Yes		
What initiates a backwash?	Depends on water quality, head loss, and flow. At a minimum they backwash every 32 hours		
If recycled, does backwash water receive any treatment to decrease	Yes, routed to decant tanks and through plate settlers before	**Backwash**	

pathogen density?	being returned to the head of the plant		
Type of water used for backwash	Filtered/chlorinated finished water	Check back wash SOP	Yes
Are coagulant doses adjusted to accommodate the recycled flow?	Yes	Are jar test conducted to determine the impact of the recycled stream?	Yes

Measurements

CFE		IFE # 8	0.05 NTU
IFE # 1	0.05 NTU	IFE # 9	0.21 NTU
IFE # 2	0.04 NTU	IFE # 10	0.03 NTU
IFE # 3	0.09 NTU	IFE # 11	0.09 NTU
IFE # 4	0.05 NTU	IFE # 13	0.14 NTU
IFE # 5	0.03 NTU	CFE Chlorine Residual	0.01
IFE # 6	0.10 NTU	CFE pH	6.0 pH

Disinfection

Type of Disinfection Used	Chlorine	Where is the disinfection application point?	Pretreatment building, post chlorination in chemical building, rechlorination in Montclair building
Is the disinfection building safe & secure?	Yes	Continuous Operation?	Yes
Are there spill containment provisions?	Yes	Adequate stand by equipment?	Yes
How often is dosage checked?	Online in SCADA and daily via inspection	Where is the residual measured?-	In laboratory in from finish water tap, and downstream of finish water reservoir
Contact Time	See Chlorine CTs in **Attachment D**	Will first customer receive chlorinated water with adequate CT to inactivate 3-log Giardia/4-log virus?	Not Reviewed

Have there been any interruptions in disinfection?	No. When doing short-term repairs increase dosage at pretreatment so adequate downstream	Are daily operating records maintained?	Yes

Comments:_____
_____
_____
_____
_____

Pump and Pumping Facilities

Name of Pump Station	Clifton Pump Station
Description of pumps (number, types, function)	3 single-speed centrifuge pumps
Pump Capacities (mgd)	10 mgd each
Are flow meters present? Are flow records kept?	Yes
Are redundant pumps present? Is there an isolation valve for each pump?	Yes
Do pumps have excessive vibration or heat when running?	NA
Is security adequate? Are the building and equipment protected from flooding?	Yes
Is lubrication oil food grade and in good shape?	Yes
Are cross connections present at water lubricated pumps? Is each pump equipped with a check valve?	No
Are adequate alarms present?	Yes

Comments: _____

Storage Facilities

Reservoir	Cedar Grove	Elevated, ground storage tank, hydropneumatic?	NA
Tank Location	Holding treated water for distribution	Last inspection/ cleaning date	NA
Type of Material	NA	Capacity	640 MG
Age	105 years	External Condition	
Time since last Cleaning	Never	Vent and vent screen condition	NA
Average Detention Time (Days)	Approximately 7 days	Do overflows terminate 12-24" above the open basin/splash pads? Screened?	NA
Can tank be isolated from the system?	NA	Frequency of inspection and cleaning?	Daily visual inspections
Any issues during low temperatures?	NA	Do overflows have splash pads?	Rip rap overflow approximately 2-3 feet in size that would discharge into stream
Is site security adequate	Yes	If reservoir, enforcement action to cover or treated in place? Status. Interim measures?	ACO to evaluate alternatives, awaiting response from State
Are air vent turned down or covered, screened?	NA		

Comments:_____
_____
_____
_____

Storage Tank names	Belleville	Elevated, ground storage tank, hydropneumatic?	Below ground
Tank Location	Belleville Complex downstream of Cedar Grove Reservoir	Last inspection/ cleaning date	Unknown and possibly never
Type of Material	Concrete	Capacity	200,000 gallon
Age	Approximately 20 years	External Condition	Below ground
Time since last Cleaning	Unknown and possibly never	Vent and vent screen condition	Adequate
Average Detention Time (Days)	Approximately 3 days	Do overflows terminate 12-24" above the open basin/splash pads? Screened?	Could not ascertain due to snow on ground
Can tank be isolated from the system?	Yes	Frequency of inspection and cleaning?	NA
Any issues during low temperatures?	No	Do overflows have splash pads?	Could not ascertain due to snow on ground
Is site security adequate	Yes	Closed Tank or Reservoir? If reservoir, enforcement action to cover or treated in place? Status. Interim measures?	Closed Tank
Are air vent turned down or covered, screened?	Yes		

Distribution

System Pressure Range	40-120 PSI
Number of Pressure Zones	3
Number of hydrants (flush and fire)	5000 fire hydrants
Number of Dead End Lines	Approximately 25
How many PRVs are present? Any issues?	43 active and 49 total
Are distribution system maps complete?	Yes
Does the system have adequate valving?	Yes, can reconfigure water to move throughout system. Only times that customers are without water is when making minor (less than 2 -4 hour) repairs
Are leaks numerous?	Approximately 20% - 25% total water loss
What disinfection procedure is used for new lines and repairs?	- For new lines super-chlorinate for 48 hours - For line repairs super-chlorinate for approximately 4 hours
Does the system have a flushing program?	- Annually for dead ends in April or May - Others lines are flushed when customer complains
Does the system have adequate spare parts and repair supplies for the distribution system?	Yes store parts at 4 locations. 1) 239 Central Avenue in the distribution office in Newark; 2) 1294 McBride office in Little Falls; 3) Treatment plant; 4) Montclair post chlorination station

Additional Comments:

_____

_____

_____

_____

Appendix B

File Name: DSC05488.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/10/2014 2:48:34 PM
Photographer	D. Vanlerberghe
Camera	Sony Cyber Shot Serial No. 7123396 (Region 2 Camera)
Description	Overview of Charlotteburg Reservoir, showing houses on hill above reservoir

File Name: DSC05489.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/10/2014 2:48:47 PM
Photographer	D. Vanlerberghe
Camera	Sony Cyber Shot Serial No. 7123396 (Region 2 Camera)
Description	Charlotteburg Reservoir intake building

File Name: DSC05490.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/10/2014 2:58:08 PM
Photographer	D. Vanlerberghe
Camera	Sony Cyber Shot Serial No. 7123396 (Region 2 Camera)
Description	Traveling screen, screen building for Charlotteburg Reservoir

File Name: DSC05491.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/10/2014 3:13:17 PM
Photographer	D. Vanlerberghe
Camera	Sony Cyber Shot Serial No. 7123396 (Region 2 Camera)
Description	Fence damage, perimeter of screen building for Charlotteburg Reservoir

File Name: DSC05485.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/10/2014 4:02:34 PM
Photographer	C. Alvarez
Camera	Sony Cyber Shot Serial No. 7123396 (Region 2 Camera)
Description	Charlotteburg Reservoir intake pumps

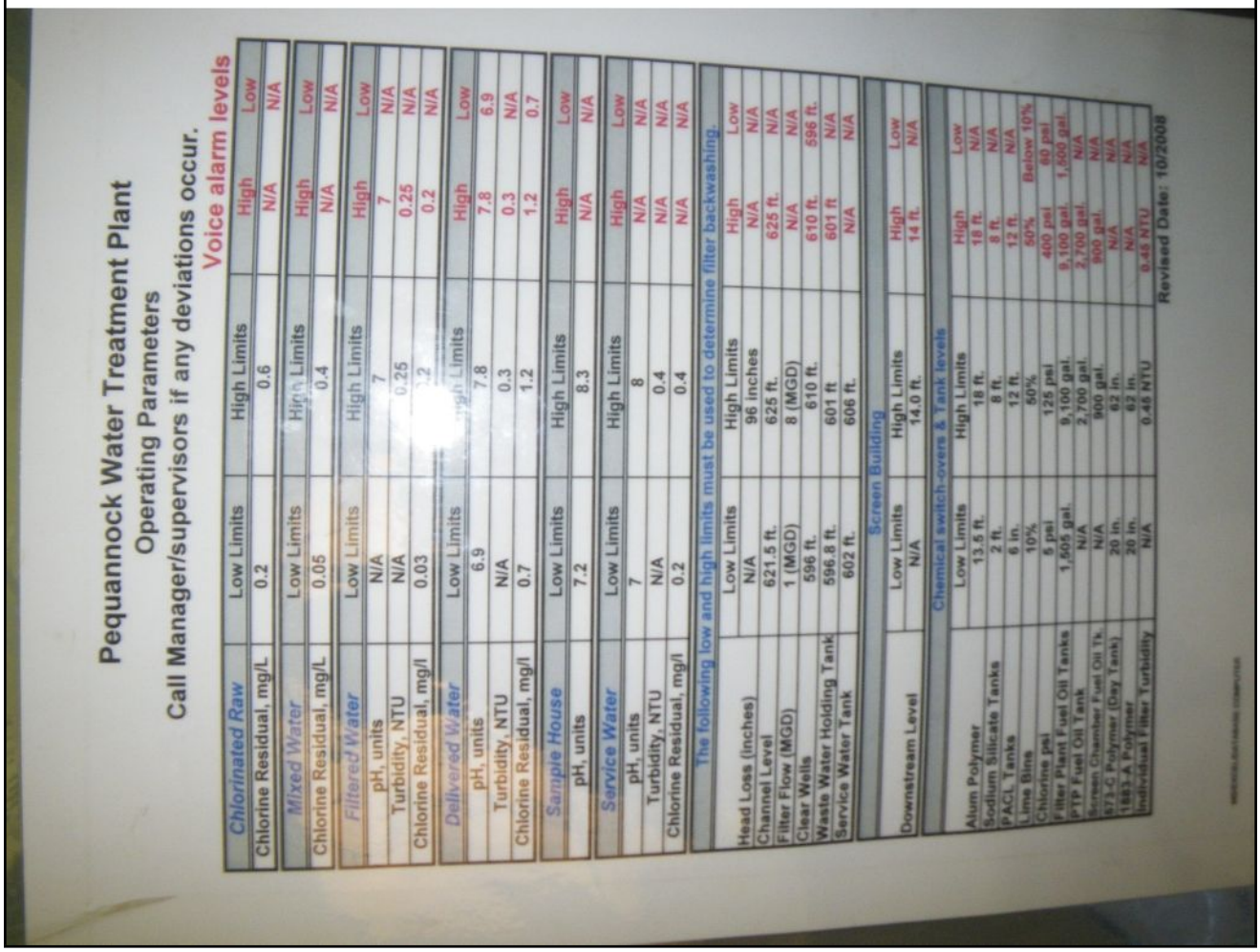
File Name: DSC05486.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/10/2014 4:02:43 PM
Photographer	C. Alvarez
Camera	Sony Cyber Shot Serial No. 7123396 (Region 2 Camera)
Description	Charlotteburg Reservoir intake pumps view to the right

File Name: IMGP0001.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 10:30:56 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Pequannock water treatment plant (WTP) sample taps in WTP lab

File Name: IMGP0002.JPG



Pequannock Water Treatment Plant
Operating Parameters
Call Manager/supervisors if any deviations occur.
Voice alarm levels

	Low Limits	High Limits	High	Low
Chlorinated Raw				
Chlorine Residual, mg/L	0.2	0.6	N/A	N/A
Mixed Water				
Chlorine Residual, mg/L	0.05	0.4	N/A	N/A
Filtered Water				
pH, units	N/A	7	7	N/A
Turbidity, NTU	N/A	0.25	0.25	N/A
Chlorine Residual, mg/l	0.03	2	0.2	N/A
Delivered Water				
pH, units	6.9	7.8	7.8	6.9
Turbidity, NTU	N/A	0.3	0.3	N/A
Chlorine Residual, mg/l	0.7	1.2	1.2	0.7
Sample House				
pH, units	7.2	8.3	N/A	N/A
Service Water				
pH, units	7	8	N/A	N/A
Turbidity, NTU	N/A	0.4	N/A	N/A
Chlorine Residual, mg/l	0.2	0.4	N/A	N/A

The following low and high limits must be used to determine filter backwashing.

	Low Limits	High Limits	High	Low
Head Loss (inches)	N/A	96 inches	N/A	N/A
Channel Level	621.5 ft.	625 ft.	625 ft.	N/A
Filter Flow (MGD)	1 (MGD)	8 (MGD)	N/A	N/A
Clear Wells	596 ft.	610 ft.	610 ft.	596 ft.
Waste Water Holding Tank	596.8 ft.	601 ft	601 ft	N/A
Service Water Tank	602 ft.	606 ft.	N/A	N/A

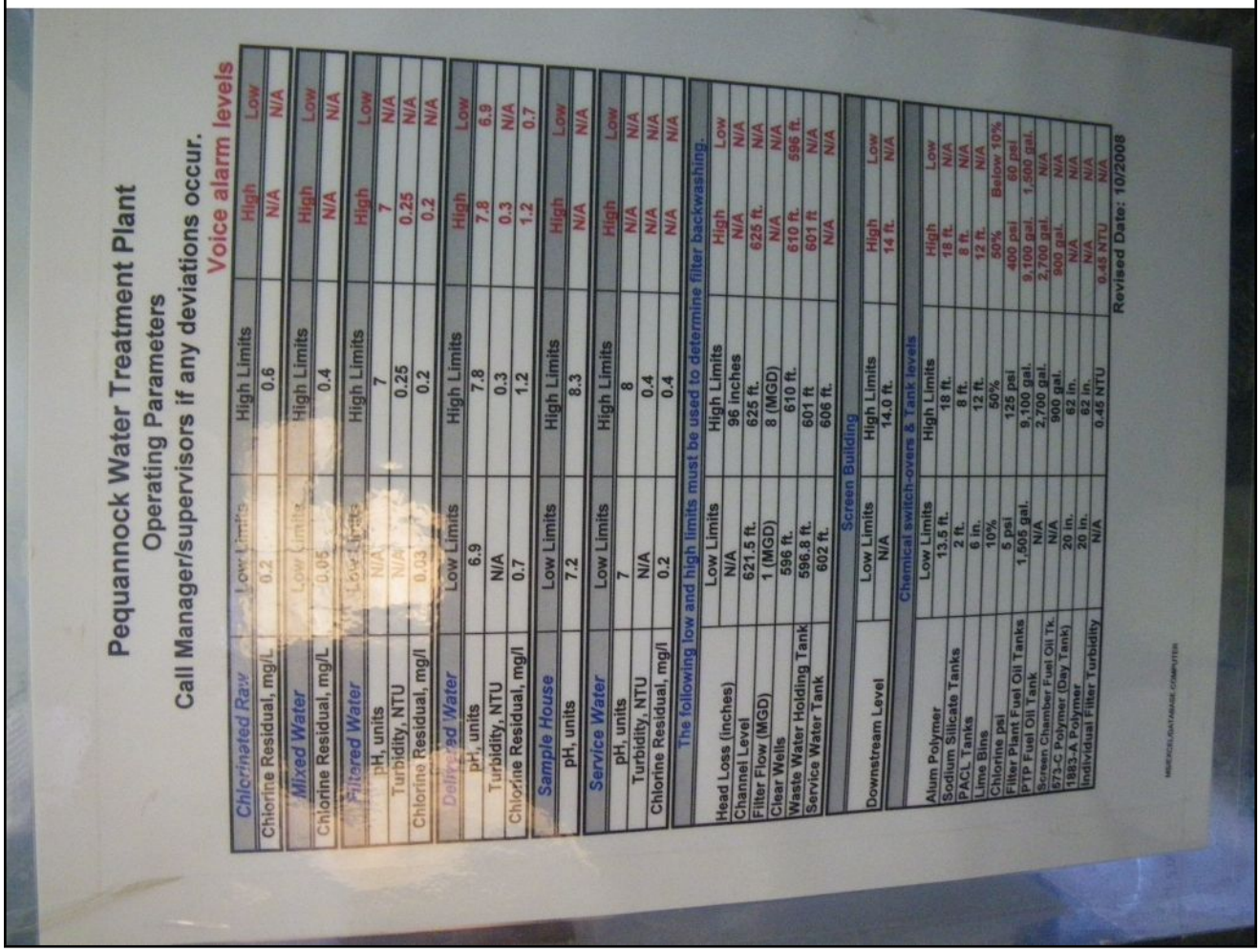
Screen Building	Low Limits	High Limits	High	Low
Downstream Level	N/A	14.0 ft.	14 ft.	N/A

Chemical switch-overs & Tank levels	Low Limits	High Limits	High	Low
Alum Polymer	13.5 ft.	18 ft.	18 ft.	N/A
Sodium Silicate Tanks	2 ft.	8 ft.	8 ft.	N/A
PACL Tanks	6 in.	12 ft.	12 ft.	N/A
Lime Bins	10%	80%	80%	Below 10%
Chlorine psi	5 psi	125 psi	400 psi	60 psi
Filter Plant Fuel Oil Tanks	1,505 gal.	9,100 gal.	9,100 gal.	1,500 gal.
PTP Fuel Oil Tank	N/A	2,700 gal.	2,700 gal.	N/A
Screen Chamber Fuel Oil Tk.	N/A	900 gal.	900 gal.	N/A
571-C Polymer (Day Tank)	20 in.	62 in.	N/A	N/A
1883-A Polymer	20 in.	62 in.	N/A	N/A
Individual Filter Turbidity	N/A	0.45 NTU	0.45 NTU	N/A

Revised Date: 10/2008

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 10:45:07 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP lab operating parameters sheet (with flash)

File Name: IMGP0003.JPG



Pequannock Water Treatment Plant
Operating Parameters
Call Manager/supervisors if any deviations occur.
Voice alarm levels

	Low Limits	High Limits	High	Low
Chlorinated Raw				
Chlorine Residual, mg/L	0.2	0.6	N/A	N/A
Mixed Water	Low Limits	High Limits	High	Low
Chlorine Residual, mg/L	0.05	0.4	N/A	N/A
Filtered Water	Low Limits	High Limits	High	Low
pH, units	N/A	7	7	N/A
Turbidity, NTU	N/A	0.25	0.25	N/A
Chlorine Residual, mg/l	0.03	0.2	0.2	N/A
Delivered Water	Low Limits	High Limits	High	Low
pH, units	6.9	7.8	7.8	6.9
Turbidity, NTU	N/A	0.3	0.3	N/A
Chlorine Residual, mg/l	0.7	1.2	1.2	0.7
Sample House	Low Limits	High Limits	High	Low
pH, units	7.2	8.3	N/A	N/A
Service Water	Low Limits	High Limits	High	Low
pH, units	7	8	N/A	N/A
Turbidity, NTU	N/A	0.4	N/A	N/A
Chlorine Residual, mg/l	0.2	0.4	N/A	N/A

The following low and high limits must be used to determine filter backwashing.

	Low Limits	High Limits	High	Low
Head Loss (inches)	N/A	96 inches	N/A	N/A
Channel Level	621.5 ft.	625 ft.	625 ft.	N/A
Filter Flow (MGD)	1 (MGD)	8 (MGD)	N/A	N/A
Clear Wells	596 ft.	610 ft.	610 ft.	596 ft.
Waste Water Holding Tank	596.8 ft.	601 ft	601 ft	N/A
Service Water Tank	602 ft.	606 ft.	N/A	N/A

Screen Building	Low Limits	High Limits	High	Low
Downstream Level	N/A	14.0 ft.	14 ft.	N/A

Chemical switch-overs & Tank levels	Low Limits	High Limits	High	Low
Alum Polymer	13.5 ft.	18 ft.	18 ft.	N/A
Sodium Silicate Tanks	2 ft.	8 ft.	8 ft.	N/A
PACL Tanks	6 in.	12 ft.	12 ft.	N/A
Lime Bins	10%	50%	50%	Below 10%
Chlorine psi	5 psi	125 psi	400 psi	60 psi
Filter Plant Fuel Oil Tanks	1,505 gal.	9,100 gal.	9,100 gal.	1,500 gal.
PTP Fuel Oil Tank	N/A	2,700 gal.	2,700 gal.	N/A
Screen Chamber Fuel Oil Tk.	N/A	900 gal.	900 gal.	N/A
673-C Polymer (Day Tank)	20 in.	62 in.	N/A	N/A
1883-A Polymer	20 in.	62 in.	N/A	N/A
Individual Filter Turbidity	N/A	0.45 NTU	0.45 NTU	N/A

Revised Date: 10/2008

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 10:45:33 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP lab operating parameters sheet (without flash)

File Name: IMGP0004.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 10:47:34 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP lab jar test

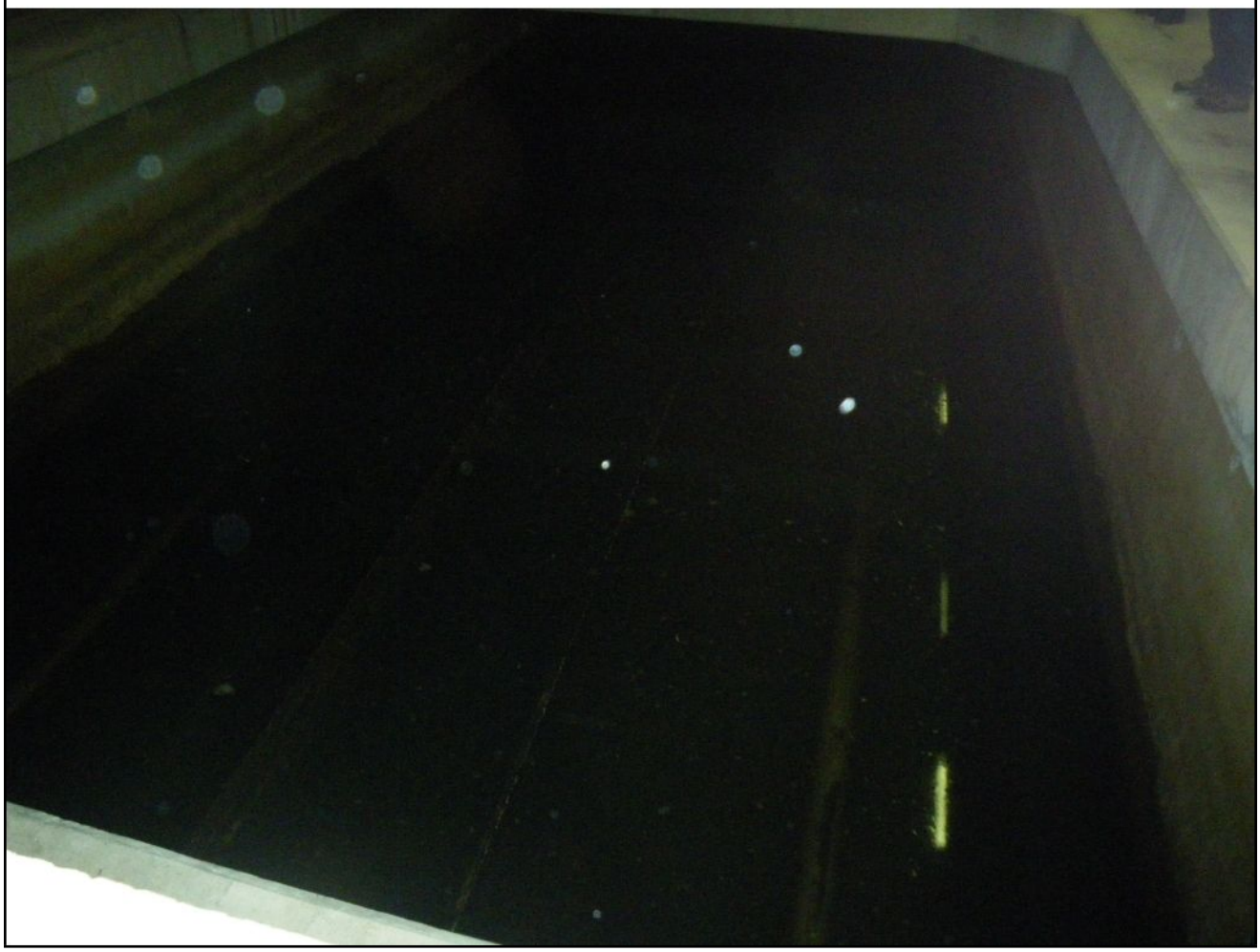
File Name: IMGP0005.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:03:29 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP lab jar test, filter simulation

File Name: IMGP0006.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:03:36 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP lab jar test, filter simulation

File Name: IMGP0007.JPG



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Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:20:27 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP filter No. 10, before backwash

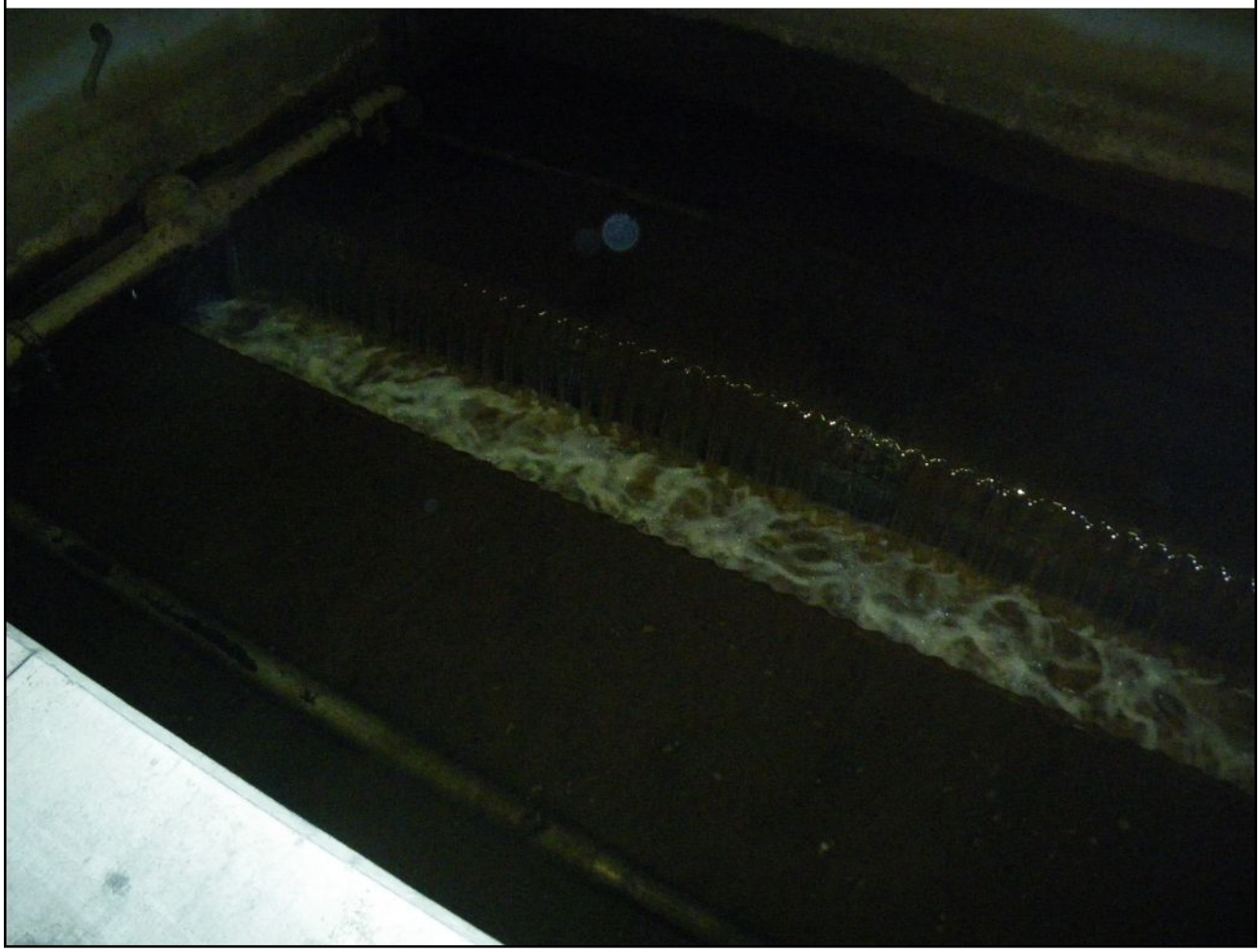
File Name: IMGP0008.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:25:25 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, filter drain down

File Name: IMGP0009.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:28:36 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, start of backwash

File Name: IMGP0010.JPG



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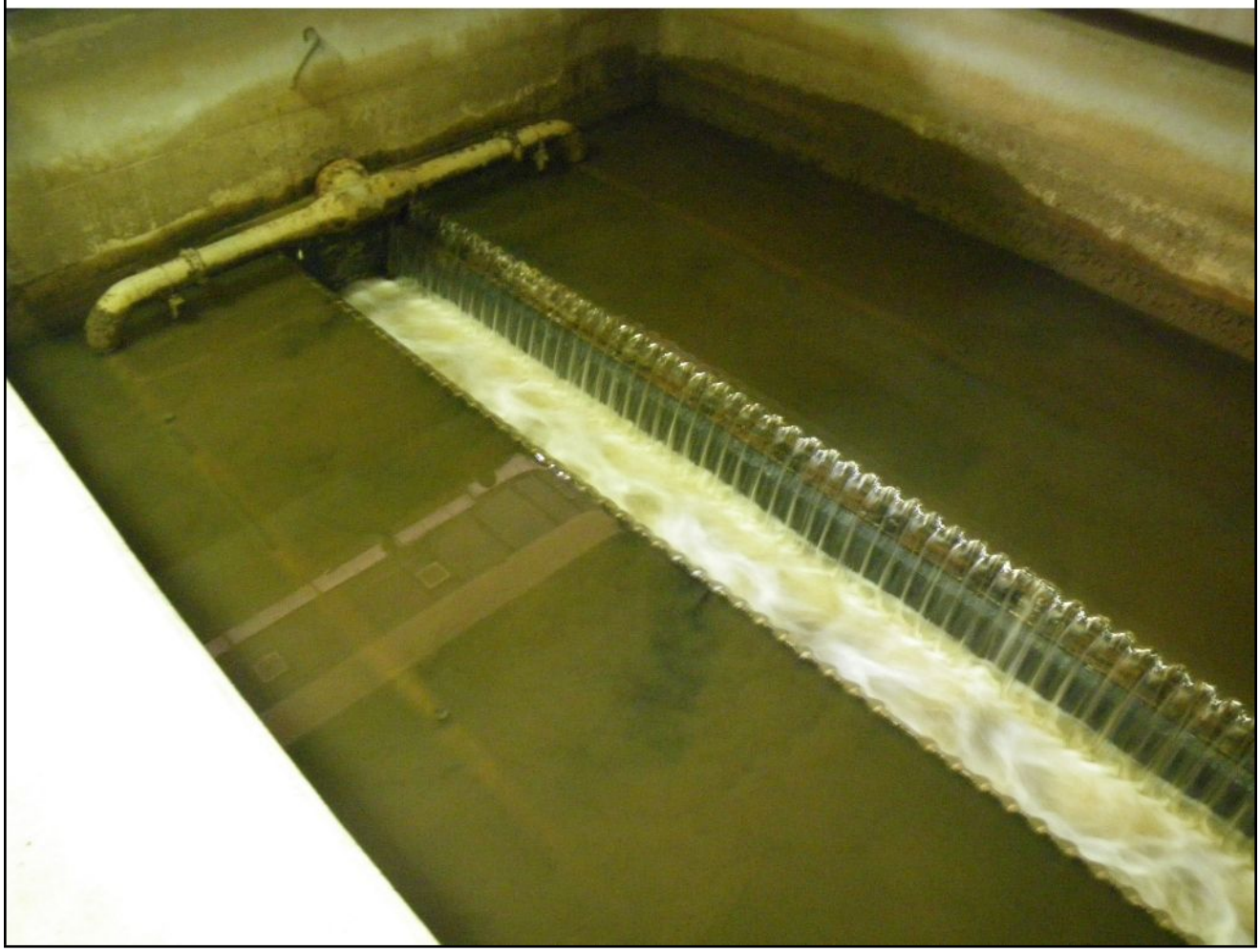
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:29:46 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, during backwash

File Name: IMGP0011.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:31:00 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, during backwash

File Name: IMGP0012.JPG



Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:33:35 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, during backwash

File Name: IMGP0013.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:35:50 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, end of backwash

File Name: IMGP0014.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:36:23 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Backwash, filter No. 10, end of backwash

File Name: IMGP0015.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:48:22 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Plate settlers, filter backwash

File Name: IMGP0016.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 11:59:13 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Filter backwash, wastewater holding tank

File Name: IMGP0017.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 12:10:51 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Filter backwash, plate settler sludge pumps

File Name: IMGP0018.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 12:11:07 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Filter backwash, wastewater pumps

File Name: IMGP0019.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 12:14:33 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Filter pipe gallery

File Name: IMGP0020.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 12:16:30 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Filter No. 10 turbidimeter

File Name: IMGP0021.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 3:17:38 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP filter No. 4, emptied

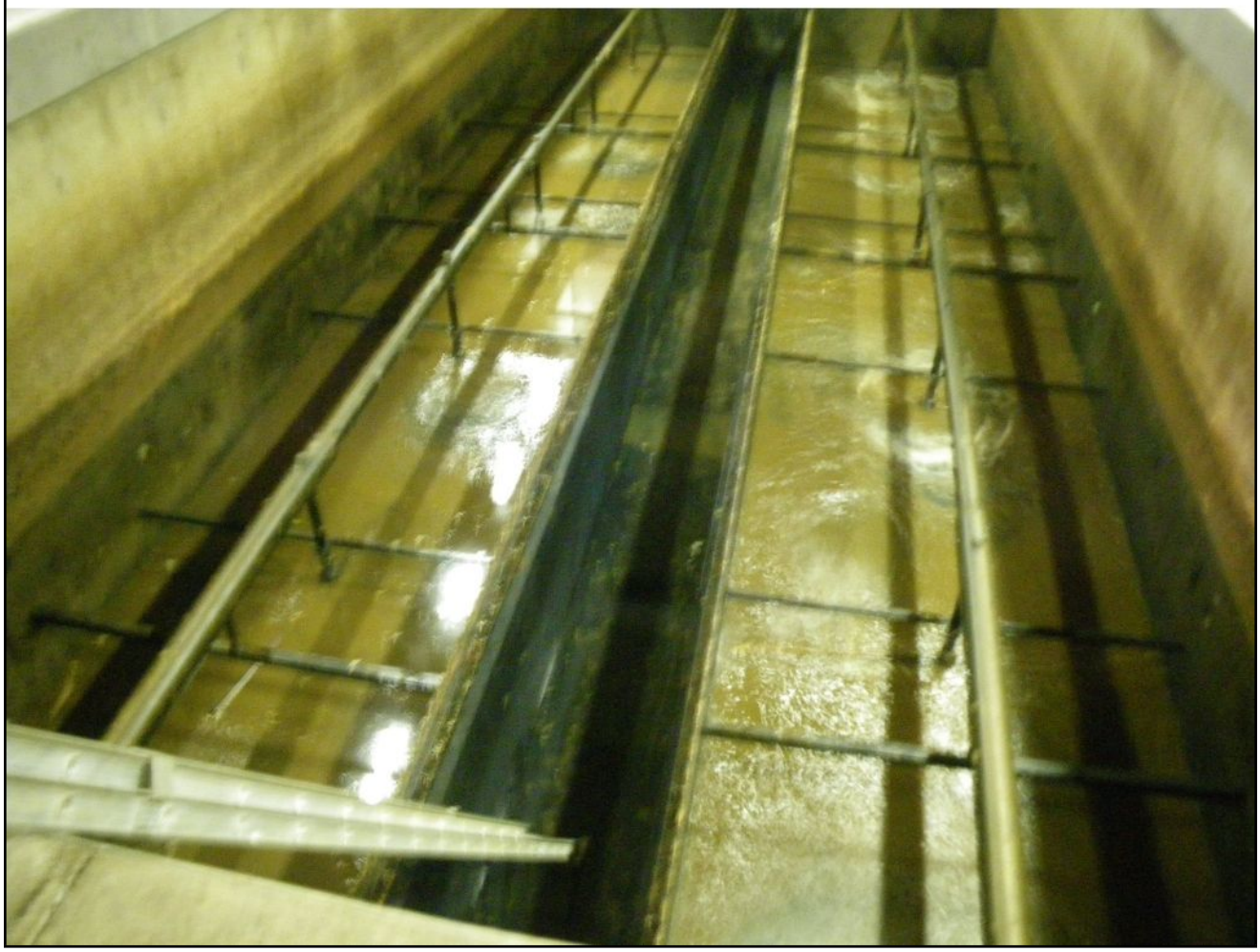
File Name: IMGP0022.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 3:19:24 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP filter No. 4, emptied

File Name: IMGP0023.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 3:20:20 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP filter No. 4, emptied

File Name: IMGP0024.JPG



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Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 3:40:58 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP filter No. 4, left surface sweeps not moving, right surface sweeps moving

File Name: IMGP0025.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 3:41:23 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	WTP filter No. 4, left surface sweeps not moving, right surface sweeps moving

File Name: IMGP0026.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/11/2014 4:53:39 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Polymer storage tanks, containment area

File Name: IMGP0027.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 9:42:27 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Wayne pump station building

File Name: IMGP0028.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 9:44:59 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Wayne pump station pumps

File Name: IMGP0029.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 10:17:56 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Clifton pump station pumps (Chittenden Road)

File Name: IMGP0030.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 10:54:46 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Belleville complex

File Name: IMGP0031.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 11:50:00 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Montclair rechlorination station pumps

File Name: IMGP0032.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 11:53:40 AM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Montclair rechlorination station, surge tank

File Name: IMGP0033.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 2:20:14 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Cedar Grove reservoir

File Name: IMGP0034.JPG

Attributes	
Title	Newark, New Jersey Sanitary Survey
Subject	Safe Drinking Water Act
Date Time Stamp	2/12/2014 2:20:36 PM
Photographer	D. Vanlerberghe
Camera	Pentax Optio W60 Serial No. 9309325 (NEIC Camera)
Description	Cedar Grove reservoir